ENVIRONMENT
& HEALTH

TECHNICAL MEMORANDUM

Offsite Groundwater Evaluation

Project name	**Evor Phillips Leasing Company Superfund Site**
Project no.	**51308**
Client	**Evor Phillips Leasing Company Superfund Site Settling Defendants**
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1 Introduction

The purpose of this memorandum is to summarize current conditions in groundwater at the Evor Phillips Leasing Company (EPLC) Superfund Site (Site) following our most recent groundwater sampling event completed on November 20, 2019, and to provide information regarding Site constituents of concern (COCs) in offsite groundwater and the effectiveness of the downgradient monitoring well network to monitor future conditions. This document was prepared in response to Unites States Environmental Protection Agency/New Jersey Department of Environmental Protection (EPA/NJDEP) comments from August 13, 2019 (**Attachment A**) regarding the downgradient groundwater screening (Hydropunch™) investigation conducted in late 2018. In our follow-up discussions, the EPA requested information regarding the downgradient extent of site-related groundwater impacts and additional support that the existing groundwater monitoring well network is sufficient for current and future monitoring of these impacts.

Various VOCs have been identified at the Site during its investigation and remediation; however, at this time, only two COCs in groundwater remain pertinent: 1,2-dichloroethane (1,2-DCA) and trichloroethene (TCE). Therefore, this memorandum is focused specifically on groundwater concentrations of these two constituents.

Based upon this evaluation, we have concluded the following:

- Potential Site impacts to offsite groundwater are laterally and vertically delineated, spatially discontinuous, and declining over time.
- Based upon existing data and utilizing conservative assumptions, it is estimated that potentially site related groundwater impacts attenuate to the GWQS approximately 840 feet downgradient from the EPLC property boundary

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(and approximately 300 feet upgradient from the proposed CPS-Madison Superfund Site remedy). This attenuation distance is expected to decrease in the future as upgradient concentrations continue to decline consistent with historic trends.

The memorandum is organized into the following sections:

- Background
- Current conditions in groundwater and concentrations over time
- Evaluation of extent of offsite impacts
- Conclusions/Recommendations for continued monitoring

2 Background

The Evor Phillips Leasing Company (EPLC) Superfund Site (Site) is located in Old Bridge, New Jersey. The Site is approximately 6 acres in size and is currently unoccupied (**Figure 1**). Historical operations (reported between 1970 and 1986) resulted in soil and groundwater impacts at the property.

Site investigation/remediation activities are ongoing or have been completed at a number of other properties in the vicinity of the Site, including the CPS/Madison Superfund Site (located downgradient from the Site) and the adjacent LORCO site. A site plan showing the locations of these other properties and approximate extent of plumes/groundwater impacts relative to the Site is included as **Attachment B**. The Perth Amboy wellfield is located approximately 4,000 feet south/southwest from the Site boundary and is the primary receptor of concern to EPA.

Remedial investigations and clean-up activities conducted at the Site since the 1980s include:

- Removal of containers as part of initial response actions
- Installation and operation of a Groundwater Treatment System (GWTS) as a remedial measure for groundwater – the system installation was completed in 1999 and the system operated from 2002 through late 2013, when operations ceased in preparation for an in-situ chemical oxidation (ISCO) groundwater remedy
- Additional investigations and soil removals in the 1990s, as well as demolition of a majority of the on-site buildings and structures
- Additional soil removal and installation of soil cap across the western portion of the Site in 2012
- Implementation of an ISCO groundwater remedy from 2014-2015, including two rounds of oxidant injections for addressing residual constituents in Site groundwater (primarily low concentrations of TCE and 1,2-DCA)

Recent Site-related activities have focused on monitoring of groundwater conditions following the ISCO injection work, to evaluate post-remedial concentrations of COCs and potential offsite impacts in groundwater. Concentration data indicate sporadic groundwater concentrations above the groundwater quality standards (GWQS) for 1,2-DCA and TCE (2 micrograms per liter [ug/L] and 1 ug/L, respectively). One concern expressed by EPA, which is evaluated herein, is the potential for site-related residual VOCs in groundwater to migrate downgradient and impact the proposed implementation of an in-situ remedy for VOCs and 1,4-dioxane at the CPS/Madison Superfund Site. The proposed location of the CPS/Madison remedy is 1,200-1,300 feet downgradient of the EPLC property boundary (as shown on **Figure 3**).

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3 Current conditions in groundwater and concentrations over time

Recent groundwater sampling data were evaluated and compared to older analytical data to provide an understanding of current groundwater conditions and potential future concentrations in offsite groundwater.

3.1 Review of current groundwater concentrations

Groundwater samples were collected from selected downgradient and on-site monitoring wells in November 2019 to provide current concentrations of Site COCs (**Table 1**). **Figure 2** presents the November 2019 sampling results, together with other post ISCO groundwater sampling results collected at on-site and downgradient monitoring wells. **Figure 3** presents posted values of site COCs (focused on 1,2-DCA and TCE) for the downgradient wells included in the 2019 sampling event and also includes the 2018 Hydropunch™ investigation results. The Hydropunch™ investigation was performed at 8 locations (HP-1 through HP-8) along a railroad right-of-way near the southern Site boundary (OBG Part of Ramboll, April 2019). Each location was sampled at multiple depths (3 each, extending to 40-50 feet below ground surface [ft bgs]) for VOCs. A cross-section figure of the Hydropunch™ results showing concentrations at each of the sampled depth intervals is provided as **Attachment C**. **Figure 3** presents the maximum concentrations of 1,2-DCA and TCE detected at each location to present the most conservative case.

As shown on **Figure 3**, concentrations of 1,2-DCA and TCE vary by location. On-site concentrations of 1,2-DCA vary between non-detect (ND) at ISCO-MW-3 and 726 ug/L at ISCO-MW-2. The ISCO-MW-2 result is an outlier. This well is screened within a localized on-site perched groundwater zone located directly above a silty clay aquitard. This well is frequently dry (i.e., approximately 1 foot of water in the bottom of the well screen), and these results do not represent conditions within the Old Bridge Sand Aquifer. This is further supported by the lower VOC concentrations detected in the Hydropunch™ samples discussed below. The next highest on-site concentration of 1,2-DCA measured in samples collected in November 2019 was 17 ug/L (ISCO-MW-5). On-site concentrations of TCE vary from 100 ug/L at ISCO-MW-3 (also located within the perched groundwater zone) to 2.1 (ISCO-MW-2).

The Hydropunch™ results present a clear transect of concentration data immediately downgradient of the former source areas addressed by the 2014-2015 ISCO injections. The VOC detections in the Hydropunch™ groundwater are spatially discontinuous and do not indicate the presence of a continuous plume immediately downgradient from the Site. The highest 1,2-DCA concentration from the Hydropunch™ results is 28.8 ug/L (HP-5) but over half (12) of the collected samples (24 total, 3 per location) had low concentrations near or below the GWQS of 2 ug/L. Similarly, the highest TCE concentration Hydropunch™ results is 19.7 ug/L (HP-5), but the majority of the collected samples (24 total) had low concentrations near or below the GWQS of 1 ug/L.

Downgradient of the Hydropunch™ transect, the maximum concentrations of COCs in offsite groundwater were 22 ug/L of 1,2-DCA and 5 ug/L of TCE, at CPS-5, with most of the results near or below GWQS (from a total of eight offsite wells sampled in 2019).

3.2 Concentrations over time

Overall, 1,2-DCA and TCE concentrations have decreased over time in on-site and offsite wells. Review of recent and historic concentrations of 1,2-DCA and TCE indicates that concentrations in most of the wells located in the offsite portion of the EPLC are currently at ND or low levels and have decreased steadily over time. These findings are consistent with the information presented in historical Site documents (e.g., 2011 Remedial Investigation Report (RIR), ARCADIS, 2011).

Concentrations of the site COCs from 2003 to present were plotted for offsite wells MW-23S, MW-23I, WCC-1S, and WCC-1M to evaluate changes in downgradient concentrations over time (**Figure 4**). A simple least-squares-regression linear trend was fit to log-concentration data to provide an indication of trend and estimates of point attenuation rates. Note that concentration data in **Figure 4** substitute concentrations of 0.1 ug/L for results of ND for quantitation of these results. This observational analysis does not specifically separate results of natural attenuation from the effects of prior remedial action at the Site.

Concentrations at offsite wells are discussed below in order from west-to-east.

<u>CPS-4</u>

CPS-4 is on the western edge of the potential downgradient groundwater impacts. CPS-4 was ND for site COCs in 2019. This well was also sampled in 2005, with analytical results of 1.2 ug/L of 1,2-DCA and 0.6 ug/L of TCE. These results indicate that 1,2-DCA and TCE impacts do not extend this far to the west.

<u>WCC-1 Well Cluster</u>

Concentrations of 1,2-DCA and TCE at WCC-1S in November 2019 were 3.7 and 2.3 ug/L, respectively. Half of the 23 samples collected since 2003 have been ND for 1,2-DCA and TCE. 1,2-DCA concentrations at this well have fluctuated between 5.3 ug/L and ND in five samples collected in the last five years.

Well WCC-1M has been sampled 25 times between 2003 and 2019. Concentrations at this well have steadily decreased since 2003, and from the maximum concentrations measured in 1992 of 660 and 94 ug/L of 1,2-DCA and TCE, respectively. The November 2019 concentrations of 5.2 ug/L of 1,2-DCA and ND for TCE are consistent with results of samples collected by CPS-Madison in June and December 2018, with DCA and TCE concentrations of 5.3 and 0.3 ug/L in June, and 5.8 and 0.2 ug/L in December. **Figure 4** presents these sample results and the best-fit trendline, which exhibit declining concentrations of 1,2-DCA and TCE at this location.

Groundwater sampling results from November 2019 at WCC-1D were ND for both 1,2-DCA and TCE.

<u>MW-23 Well Cluster</u>

The MW-23 well cluster is located approximately 420 feet downgradient of the property boundary. MW-23D was ND for TCE and ND or below 1 ug/L for 1,2-DCA, in five samples collected since 2014. MW-23S and MW-23I had detections of 1,2-DCA and TCE in 2019.

Concentrations at MW-23I were relatively low in 2019, with 3.2 ug/L of 1,2-DCA and 0.83 ug/L of TCE (below GWQS). Approximately half of the 23 sample results for this well since 2003 are ND (43% and 65% 1,2-DCA and TCE, respectively). The average concentrations at these wells since 2003 are below the GWQS.

Concentrations at MW-23S have steadily decreased since the well was installed in 2003, from 420 ug/L of 1,2-DCA and 46 ug/L of TCE, to the 2019 results of 13.8 ug/L of 1,2-DCA and 3.4 ug/L of TCE. As shown in **Figure 4**, data indicate declining trends for both constituents.

<u>CPS-5</u>
CPS-5 is a well located on the CPS parcel which is located hydraulically downgradient of the HP-1/HP-2 area and the western portion of the former LORCO property. Results of the 2019 sampling were concentrations of 21.9 ug/L of 1,2-DCA and 5 ug/L of TCE. This well had not been sampled since 2005; concentrations at that time were 300 ug/L of 1,2-DCA and 18 ug/L of TCE. Current concentrations reflect a significant decrease in mass over time at this well location.

Insufficient data are available to demonstrate a continuous decrease in concentrations at this well, or identify fluctuations which may be occurring similar to other wells. Calculation of point attenuation rates (Newell et al, 2003) from these data yields k_{point} rates of 0.18 per year and 0.087 per year for 1,2-DCA and TCE, respectively. These rates project that concentrations of 1,2-DCA and TCE will decrease to GWQS at this well within an estimated time frame of approximately 15 years.

3.3 Lateral delineation of offsite groundwater impacts

Figure 3 presents a summary of current conditions in groundwater, based upon the 2018 Hydropunch™ investigation data and 2019 sampling results for Site COCs.

The lateral extent of offsite groundwater impacts (i.e., delineation of the edges of potential EPLC groundwater impacts to the east and west) is controlled by groundwater flow direction, and confirmed by groundwater analytical results in offsite wells. The Hydropunch™ investigation consisted of groundwater sampling at depths from 10- to 50 ft bgs in 8 locations across a 550-foot transect along the EPLC property boundary, on 50- to 100-foot spacing. These results provide confidence in delineation of impacts in groundwater immediately downgradient of the former source areas. The maximum concentrations from Hydropunch™ samples were 29 ug/L of 1,2-DCA, and 20 ug/L of TCE. However, the majority of the sample results were near/below standards or ND (as shown in **Attachment C**; **Figure 3** presents only the maximum results from the three samples collected at each location). These results illustrate the sporadic distribution of COCs at the property boundary – as stated in the Hydropunch™ final report, low-level VOC detections in the Hydropunch™ samples were generally isolated and discontinuous.

Eight offsite wells (CPS-4, WCC-1S, WCC-1M, WCC-1D, MW-23S, MW-23I, MW-23D, and CPS-5) were sampled in November 2019 to provide information on the delineation of offsite groundwater impacts from the Site. Concentrations at these wells varied from ND, to 22 ug/L of 1,2-DCA and 5 ug/L of TCE, at CPS-5.

Evaluation of concentrations and groundwater flow directions indicates that the extent of TCE and 1,2-DCA impacts from the Site is delineated laterally to the east and the west. To the west, the last Hydropunch™ boring (HP-8) had a relatively higher 1,2-DCA concentration, of 27.6 ug/L. However-downgradient well CPS-4 is located near, or slightly to the west of, the groundwater flowline from HP-8; the sample from this well was ND for VOCs. Note that the ground surface at CPS-4 (approximately 25 feet mean sea level [MSL]) is approximately 11 feet lower in elevation than that at HP-8 (36 ft MSL), and as such the sampled depth interval at CPS-4 in November 2019 was at approximately the same elevation as the Hydropunch sampling interval at HP-8 (**Attachment C**). CPS-4 was also previously sampled in 2005, with 1,2-DCA and TCE concentrations below GWQS. Delineation of groundwater impacts to the east is supported by the low concentrations at HP-1 (ND for 1,2-DCE, 1.8 ug/L of TCE), the eastern-most Hydropunch™ boring.

Additional lateral delineation is also supported in part by sample results from wells located farther downgradient on the CPS site. Well MI-5 is farther downgradient and slightly west of the flowpath through CPS-4; MI-5 was most recently sampled in 2006, with results for 1,2-DCA and TCE below GWQS. Well WCC-3M is located farther downgradient and east of the flowline from HP-1; results of each of the 19 samples collected at this location between 2004 and 2017 were ND for 1,2-DCA and below GWQS for TCE.

A series of figures showing groundwater elevation contours for the Old Bridge Sand aquifer (shallow and deep zones) for the Site and downgradient areas, with interpreted flow directions, were presented in the 2011 Remedial Investigation Report (RIR) (ARCADIS, 2011) for the period of 1996 to 2009 (Figures 4-17 and 4-18, included here in **Attachment D**). Based on these figures, the groundwater flow direction in the Old Bridge sand aquifer downgradient from the Site is generally to the southwest (with some minor variation), consistent with current conditions (**Figure 3**).

As described above, the Hydropunch™ VOC sampling results, as well as groundwater sampling results for CPS-4, CPS-5 and wells located further downgradient (MI-5 and WCC-3M), provide confidence in offsite lateral groundwater delineation.

3.4 Vertical delineation of offsite groundwater impacts

Historic and recent sampling results indicate that impacts to groundwater are delineated vertically, with impacts limited to within approximately 50 feet from the ground surface. This is consistent with the results of the Hydropunch™ investigation and the sample results from offsite wells. MW-23D and WCC-1D, which are screened 90-100 feet bgs and had ND results for 1,2-DCA and TCE in 2019. This is also consistent with historic and previous interpretations of the vertical delineation of impacts in offsite groundwater.

3.5 Potential alternate source of impacts at CPS-5

Review of site documents and other information was conducted to evaluate the potential for an alternate source of VOCs, as indicated by the historic and current presence of methylene chloride in groundwater near CPS-5. Methylene chloride was detected in 2019 at MW-23S (16.1 ug/L) and CPS-5 (3.4 ug/L) as shown on **Figure 2**. Methylene chloride has been infrequently detected in Site groundwater during the last several years of monitoring, including at wells in the former source area, and was detected in only one of 24 Hydropunch™ samples (10 ug/L at HP-8).

Concentrations of methylene chloride, provided in Figures 5-17 and 5-18 from the 2011 RI (**Attachment D**), indicate the existence of a historic “hot spot” of methylene chloride at these well locations, with concentrations at MW-23S as high as 3,100 ug/L, and detections in downgradient well cluster WCC-1. The concentrations of methylene chloride measured in offsite groundwater at these locations far exceeded the concentrations that were measured at the EPLC property. The presence of significantly higher offsite concentrations of this constituent indicates the potential that these concentrations may have resulted from migration from the adjacent LORCO parcel (**Attachment A**). The former LORCO facility at one time had a series of above-ground storage tanks, and a RIR for this property (Newfields, Inc. 2000) listed soil samples with concentrations of 0.5 to 2 milligrams per kilogram (mg/kg) methylene chloride and up to 11 mg/kg TCE. TCE and methylene chloride were also detected in groundwater monitoring wells installed at this property.

Based on general historic groundwater flow directions at the Site and adjacent parcels, and the location of the LORCO site, the LORCO site and associated groundwater impacts are typically located side-gradient to the offsite EPLC groundwater impacts. However, small variations in groundwater flow direction may have resulted in the potential for commingled groundwater impacts in the vicinity of CPS-5 and the MW-23 well cluster.

4 Evaluation of extent of offsite impacts

An empirical approach was used to estimate the current downgradient extent of the 1,2-DCA groundwater impacts (for the GWQS of 2 ug/L) by directly comparing concentrations at the property line (Hydropunch™ investigation) to sampling data from offsite wells. Estimates of the length of downgradient impacts were developed using a trend-line fit to log-concentration data, which is consistent with calculation of the bulk attenuation rate in groundwater (Newell et al., 2003). Data from multiple groundwater flowlines were considered (i.e. different sets of appropriate upgradient/ downgradient well locations) to provide a range of length of impact estimates, however, a representative “central” flowline (depicted on **Figure 3**) was selected as the most representative to evaluate the downgradient extent of potentially site related 1,2-DCA groundwater impacts. This flowline was selected for the evaluation based on the availability of several sampling locations/data points (HP-5, MW-23 cluster, WCC-1 cluster) closely aligned along the flowline that provided data to support the analysis, as well as the downgradient position/proximity of the flowline relative to residual on-Site source areas (refer to **Figure 3**).

The flowline extending from HP-5 incorporates the maximum concentration from the Hydropunch™ evaluation (28.8 ug/L), and presents three current data points along the groundwater flow path with minimal lateral offset (refer to **Figure 5**). The use of the maximum concentrations from 2019 sampling of the MW-23 and WCC well clusters (13.8 ug/L at MW-23S and 5.2 ug/L at WCC-1M), instead of averaged concentrations from each well cluster, provides a more conservative estimate (further estimated extent of impacts).

Estimated groundwater flow velocities (in the range of 1.1 to 1.9 ft/day or approximately 400 to 700 ft/year as presented in the 2011 RI) support that post ISCO groundwater has traveled an estimated 1,200 to 2,000 ft downgradient from the EPLC property by 2018. All the wells critical to this evaluation are well within this groundwater travel distance and the current data from these wells should reflect post ISCO groundwater conditions.

As shown on **Figure 5**, a reasonable fit is demonstrated between the trendline and the individual data points. Extrapolation of the TCE impacts from the same dataset is not required, in that the measured concentration of TCE at well WCC-1M was ND in 2019.

Based upon the best-fit trendline shown on **Figure 5**, groundwater potentially impacted with site related 1,2-DCA concentrations attenuates to the GWQS approximately 740 ft downgradient from HP-5 or approximately 840 feet downgradient from the EPLC property boundary (and approximately 300 feet upgradient from the proposed CPS-Madison Superfund Site ISCO remedy location). This attenuation distance is expected to decrease in the future as upgradient concentrations continue to decline consistent with historic trends.

The estimated extent of 1,2-DCA groundwater impacts is supported in part by data collected at well CPS-8, which is located 700 feet directly downgradient of the WCC-1 cluster, near the proposed CPS ISCO remedy footprint (refer to **Figure 3**). Concentrations of 1,2-DCA and TCE have been ND or below GWQS in each of the 12 samples collected at CPS-8 between 2012 and 2018, including the most recent results from December 2018, of 0.07 J ug/L of 1,2-DCA and ND for TCE (Princeton Geoscience, 2019).

As shown on **Figure 3**, wells WCC-4S and WCC-4M are also located downgradient on the CPS property (approximately 600 feet downgradient/side-gradient from the WCC-1 cluster). The most recent sampling results (2005) for these two wells indicate elevated detections of 1,2-DCA (up to 89 ug/L) and TCE (15 ug/L). However, these wells are located directly adjacent to source areas at the CPS property planned for ISCO remediation in the near future (it is also noted that 1,2-DCA and TCE have been identified as COCs associated with the CPS site). In addition, other non-Site related VOCs were detected in these wells (refer to **Attachment F**), supporting that the groundwater impacts are influenced by the CPS source areas.

5 Conclusions/Recommendations for continued monitoring

Potential Site impacts to offsite groundwater are laterally and vertically delineated, spatially discontinuous, and declining over time, as described herein.

Based upon the existing data and utilizing conservative assumptions, it is estimated that potentially site-related groundwater impacts attenuate to the GWQS approximately 840 feet downgradient from the EPLC property boundary (and approximately 300 feet upgradient from the proposed CPS-Madison Superfund Site ISCO remedy location). This attenuation distance is expected to decrease in the future as upgradient concentrations continue to decline consistent with historic trends.

Given the above analysis, Ramboll recommends continued future monitoring of groundwater conditions in the area. In addition to select on-site wells, future monitoring of the following off-site well locations is recommended:

- WCC-1S and WCC-1M
- MW-23S and MW-23I
- CPS-5
- CPS-4

We are also recommending that Wells MW-14S, MW-23D and WCC-3M be removed from the downgradient monitoring network, based on recent years of ND results for 1,2-DCA and TCE.

Pending EPA approval of these recommendations, a detailed Long-Term Monitoring Plan will be developed outlining the future monitoring scope.

Attachments

Tables

1. November 2019 Groundwater Sampling Results

Figures

1. Site Location Map
2. 2014-2019 Groundwater Sampling Results
3. Estimated Groundwater Impacts Extent
4. Time-Concentration Plots for Offsite Groundwater
5. Current 1,2-DCA Impacts Centerline

Attachments

A. EPA/NJDEP Emailed Comments, 2019
B. Conceptual Site Model Plan View (Figure 7-1, CPS/Madison Superfund Site Remedial Investigation Report [2015])
C. Hydropunch™ Cross-Section (Figure 6, Groundwater Screening Report. OBG Part of Ramboll, 2019)
D. Historical Isoconcentration and Groundwater Elevation Contour Maps (Figures 4-17, 4-18, 5-17, 5-18, Evor Phillips Leasing Company Superfund Site, Groundwater Remedial Investigation Report [2011])
E. Well Construction and Groundwater Concentration Data for Offsite Wells
F. Detected VOCs in WCC-4S/WCC-4M (2005 Sampling Event) – CPS/Madison Superfund Site

Abbreviations

1,2-DCA	1,2-dichloroethane
bgs	below ground surface
ft	feet
ft/d	feet per day
COC	constituent of concern
EPLC	Evor Phillips Leasing Company
GWQS	groundwater quality standard
ND	non-detect concentration
NJDEP	New Jersey Department of Environmental Protection
TCE	trichloroethene
ug/L	microgram per liter (unit of concentration)
US EPA	United States Environmental Protection Agency
VOC	volatile organic compound

References

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TABLES

OBG/Ramboll Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 1/16/18)1	TB_111919	WCC-1D_111919	MW-23S_111919	WCC-1M_111919	MW-23D-111919	WCC-1S-111919	TB_112019	MW-10S_112019	DUP_112019	CPS-5_112019	MW-23I_112019	CPS-4_112019	ISCO-MW-3_112019	FB_112019	ISCO-MW-5_112019	ISCO-MW-2_112019
Lab Sample ID:			JC98826-1	JC98826-2	JC98826-3	JC98826-4	JC98826-5	JC98826-6	JC98894-1	JC98894-2	JC98894-3	JC98894-4	JC98894-5	JC98894-6	JC98894-7	JC98894-8	JC98894-9	JC98894-10
Date Sampled:			11/19/2019	11/19/2019	11/19/2019	11/19/2019	11/19/2019	11/19/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019	11/20/2019
Matrix:			Trip Blank Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Trip Blank Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Field Blank Water	Ground Water	Ground Water
MS Volatiles (SW846 8260C)																		
Acetone	ug/l	6000	< 10	< 10	< 10	**11.6** [a]	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	ug/l	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	ug/l	10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2-Butanone (MEK)	ug/l	300	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 [b]	< 10 [b]	< 10 [b]	< 10 [b]	< 10 [b]	< 10 [b]	< 10	< 10 [b]	< 10 [c]
Carbon disulfide	ug/l	700	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Carbon tetrachloride	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	70	< 1	< 1	**0.86** J	< 1	< 1	< 1	< 1	< 1	< 1	**0.61** J	< 1	< 1	< 1	< 1	< 1	**1.7**
Chloromethane	ug/l	-	< 1.0 [c]	< 1.0 [c]	**1.6**	**3.6**	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]	< 1.0 [c]
Cyclohexane	ug/l	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/l	0.02	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Dibromochloromethane	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/l	0.03	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	ug/l	1000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2.0 [c]	< 2.0 [c]	< 2.0 [c]	< 2.0 [c]	< 2.0 [c]	< 2.0 [c]	< 2	< 2.0 [c]	< 2.0 [c]
1,1-Dichloroethane	ug/l	50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	2	< 1	< 1	**13.8**	**5.2**	< 1	**3.7**	< 1	**4.8**	**4.7**	**21.9**	**3.2**	< 1	< 1	< 1	**17**	**726**
1,1-Dichloroethene	ug/l	1	< 1	**1.8**	< 1	< 1	**0.77** J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/l	70	< 1	< 1	**2.7**	< 1	< 1	**1.2**	< 1	< 1	< 1	**2.7**	< 1	< 1	**86.8**	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.2	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	ug/l	700	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Freon 113	ug/l	20000	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Hexanone	ug/l	40	< 5	< 5	< 5.0 [d]	< 5.0 [d]	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Isopropylbenzene	ug/l	700	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl Acetate	ug/l	7000	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5.0 [c]	< 5.0 [c]	< 5.0 [c]	< 5.0 [c]	< 5.0 [c]	< 5.0 [c]	< 5	< 5.0 [c]	< 5.0 [c]
Methylcyclohexane	ug/l	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl Tert Butyl Ether	ug/l	70	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone(MIBK)	ug/l	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene chloride	ug/l	3	< 2	< 2	**16.1**	**1.4** J	< 2	< 2	< 2	< 2	< 2	**3.4**	**2.5**	< 2	< 2	< 2	< 2	< 2
Styrene	ug/l	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**3.2**
Tetrachloroethene	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	**2**	< 1	< 1	**2**
Toluene	ug/l	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	9	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	30	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	ug/l	1	< 1	< 1	**3.4**	< 1	< 1	**2.3**	< 1	**0.66** J	**0.69** J	**5**	**0.83** J	< 1	**100**	< 1	**2.4**	**2.1**
Trichlorofluoromethane	ug/l	2000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Vinyl chloride	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m,p-Xylene	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Xylene (total)	ug/l	1000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
MS Volatile TIC																		
Total TIC, Volatile	ug/l	-	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< **5.6** J	< 0	< 0	< 0	< 0	< 0	< 0

Footnotes:

Results in bold indicate detected values; results in red indicate New Jersey Groundwater Quality Standards exceedances

[a] This compound does not meet the recommended minimum response factor specified into method 8260c.

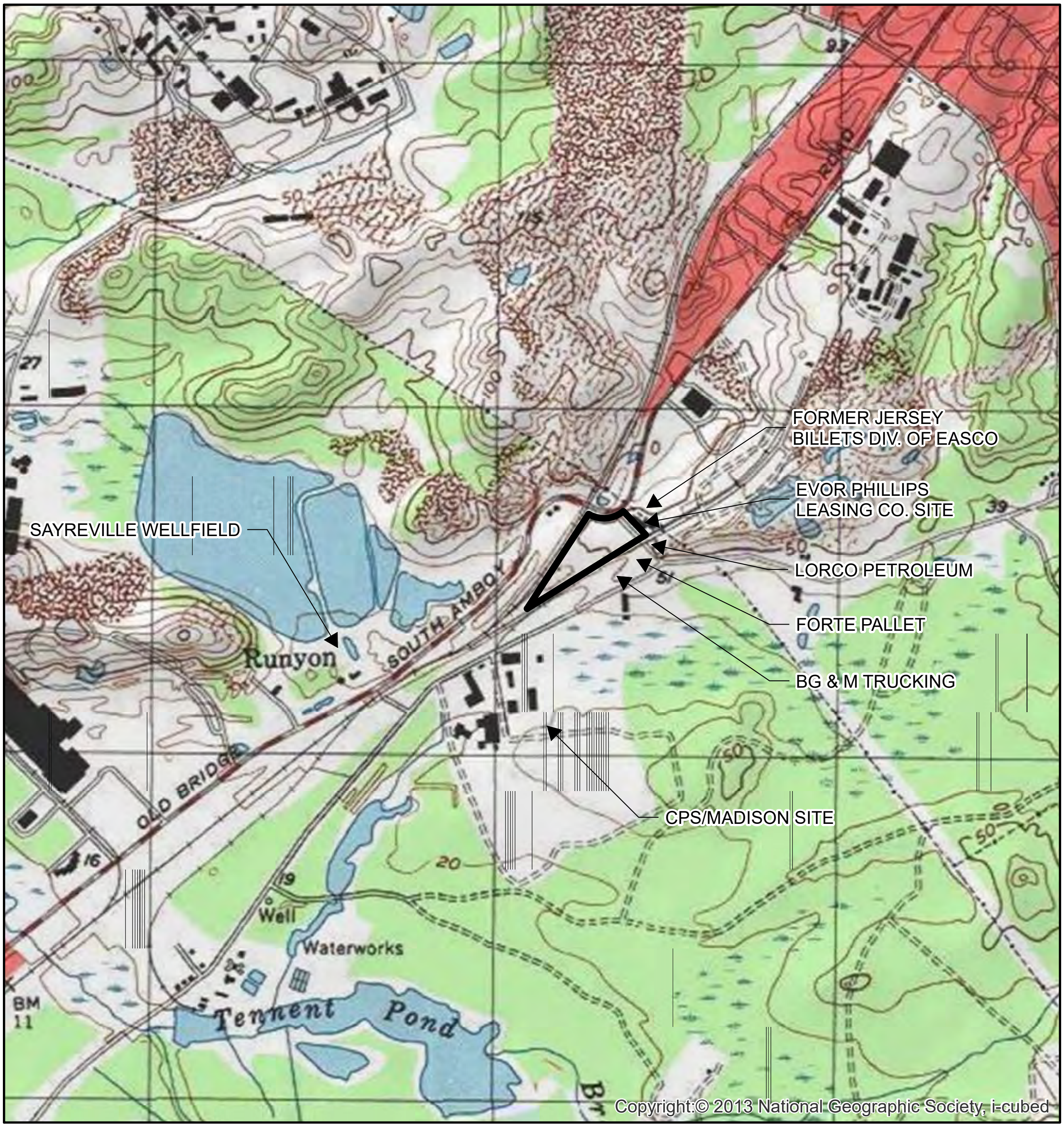
[b] This compound does not meet the recommended minimum response factor specified into method 8260c. Associated CCV outside of control limits high, sample was ND.

[c] Associated CCV outside of control limits high, sample was ND.

[d] Associated CCV outside of control limits low.

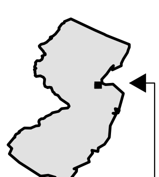
FIGURES

FIGURE 1



ADAPTED FROM: SOUTH AMBOY, NEW JERSEY USGS QUADRANGLE

EVOR PHILLIPS LEASING COMPANY
SUPERFUND SITE
OLD BRIDGE, NEW JERSEY



MAP LOCATION

N

SITE LOCATION

0 1,000 2,000 4,000
Feet

1:24,000

FILE NO. 19726.51308
FEBRUARY 2020

O'BRIEN & GERE ENGINEERS, INC.
A RAMBOLL COMPANY

RAMBOLL

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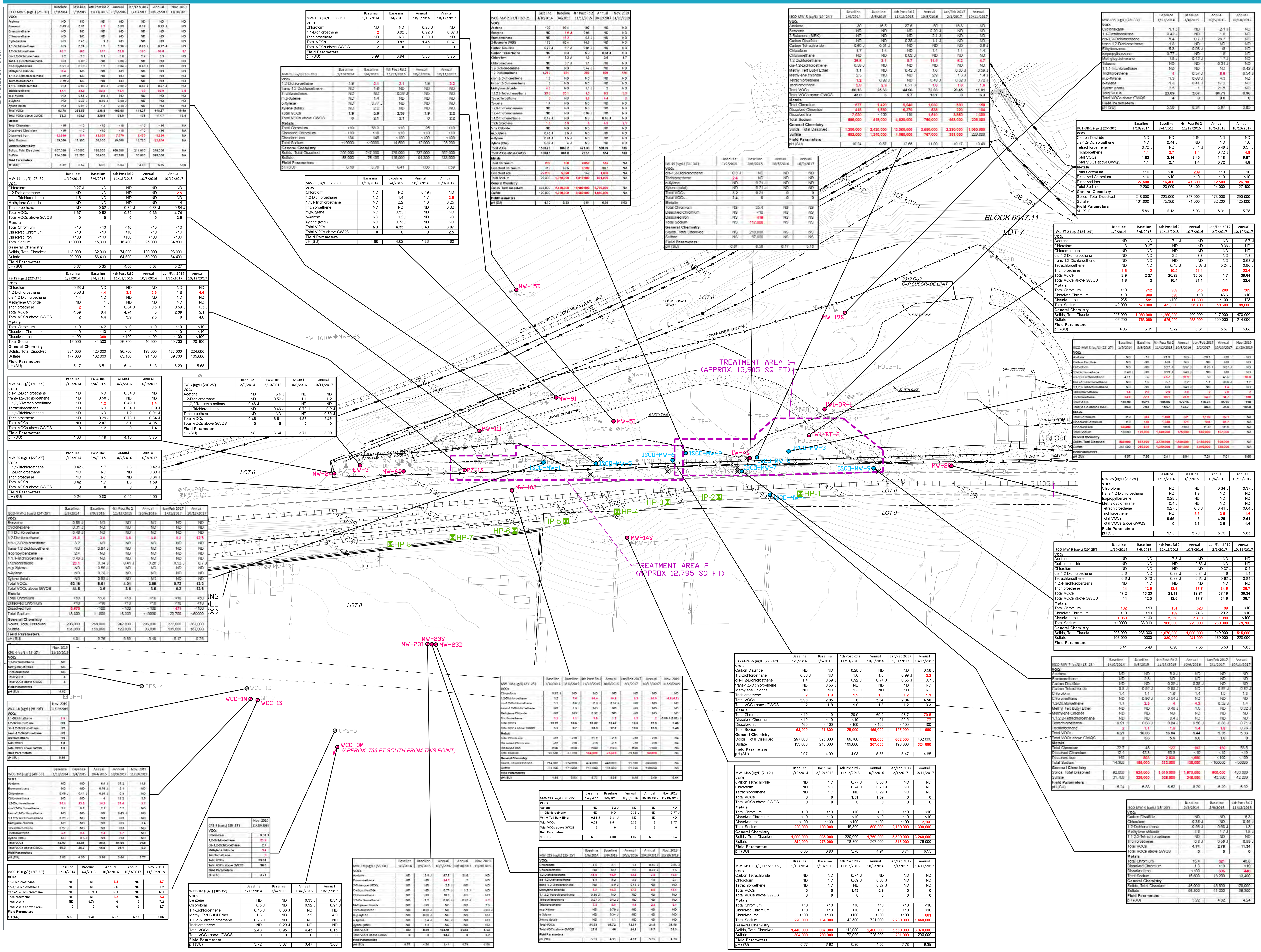

Groundwater Quality Criteria (ug/L)	
Volatile Organic Compounds (VOCs)	
Acetone	6000
Bromodichloromethane	1
Bromoform	4
Bromomethane	10
2-Butanone	300
Carbon Disulfide	700
Carbon Tetrachloride	1
Chloroform	70
Chloromethane	NA
Cyclohexane	NA
Dibromochloromethane	1
1,2-Dichlorobenzene	600
1,4-Dichlorobenzene	75
1,1-Dichloroethane	50
1,2-Dichloroethane	2
1,1-Dichloroethene	1
cis-1,2-Dichloroethene	70
trans-1,2-Dichloroethene	100
Ethylbenzene	700
Isopropylbenzene	700
Methylcyclohexane	NA
Methyl tert-butyl ether	70
Methylene Chloride	3
1,1,2,2-Tetrachloroethane	1
Tetrachloroethene	1
Toluene	600
1,2,3-Trichlorobenzene	NA
1,2,4-Trichlorobenzene	9
1,1,1-Trichloroethane	30
1,1,2-Trichloroethane	3
Trichloroethene	1
Vinyl Chloride	1
Xylene (total)	1000
Metals	
Chromium	70
General Chemistry	
Solids, Total Dissolved	500,000
Sulfate	250,000

NOTES:

1. THE GROUNDWATER IRM SYSTEM (COMPRISING OPERATING GROUNDWATER EXTRACTION WELLS EW-5 AND EW-1) WAS SHUT DOWN ON 11/25/13, IN PREPARATION FOR THE OU3 REMEDIAL ACTION WORK. THE IRM SYSTEM WILL REMAIN SHUT DOWN THROUGHOUT THE OU3 REMEDIAL ACTION IMPLEMENTATION AND ASSOCIATED GROUNDWATER MONITORING ACTIVITIES.
2. GROUNDWATER SAMPLES WERE COLLECTED VIA LOW-FLOW GROUNDWATER SAMPLING METHODS, IN ACCORDANCE WITH THE APPROVED REMEDIAL DESIGN REPORT/REMEDIAL ACTION WORK PLAN, OU3 – SITE GROUNDWATER (RDR/RAWP) DATED JANUARY 2014.
3. TCE AND 1,2-DCA ISO-CONTOURS REPRESENT 4TH POST-ROUND 2 GROUNDWATER CONDITIONS.
4. ISCO-MW-2 AND ISCO-MW-4 WERE BOTH DRY DURING THE OCT 2016 AND JAN/FEB 2017 SAMPLING EVENTS.
5. ISCO-MW-4 WAS DRY DURING THE OCT 2017 SAMPLING EVENT.

GROUNDWATER SAMPLING SCHEDULE		
Event	**Date**	**Description**
Annual/Baseline	Jan/Feb 2014	Pre-Round 1 ISCO injections
Round 1 ISCO Injections		
1st Post-Round 1	May 2014	6 weeks following Round 1
2nd Post-Round 1	June/July 2014	3 months following Round 1
3rd Post-Round 1	August 2014	4 months following Round 1
4th Post-Round 1	September 2014	5 months following Round 1
Annual/Baseline	March 2015	Pre-Round 2 ISCO injections
Round 2 ISCO Injections		
1st Post-Round 2	July 2015	6 weeks following Round 2
2nd Post-Round 2	September 2015	3 months following Round 2
3rd Post-Round 2	October 2015	4 months following Round 2
4th Post-Round 2	November 2015	5 months following Round 2
Annual	October 2016	Annual GW Event
Jan/Feb 2017	Jan/Feb 2017	Additional GW Event
Annual	October 2017	Annual GW Event
November 2019	November 2019	Additional GW Event

EVOR PHILLIPS LEASING COMPANY
SUPERFUND SITE
OLD BRIDGE, NEW JERSEY

2014-2019 GROUNDWATER SAMPLING RESULTS

1"=60' 60 0 60

FILE NO. 19726.51308
FEBRUARY 2020

O'BRIEN & GERE ENGINEERS, INC
A RAMBOLL COMPANY

NOTES:

1. RAIL LINE FOULING/OBSTRUCTION LIMITS ARE 15' FROM CENTERLINE OF RAIL IN EACH DIRECTION.
2. HORIZONTAL DATUM NAD 1983, VERTICAL DATUM NAVD 1988.
3. EXISTING GRADE ELEVATIONS AND LOCATIONS WERE OBTAINED BY MASER CONSULTING, PA ON AUGUST 10, 2012 & JANUARY 14, 2013.
4. MW-24 AND PZ-1S WERE EXCLUDED FROM THE GROUNDWATER ELEVATION CONTOURS DUE TO ANOMALOUS MEASUREMENTS.

IN CHARGE OF	G.ANGYAL
DESIGNED BY	K.MORAN
CHECKED BY	J.LEVESQUE
DRAWN BY	M.MONTAGNA

NO.	DATE	REVISION	INT.

O'BRIEN & GERE ENGINEERS, INC
A RAMBOLL COMPANY
RAMBOLL

EVOR PHILLIPS LEASING COMPANY SITE
GROUNDWATER EVALUATION

NEW JERSEY

ESTIMATED GROUNDWATER IMPACTS EXTENT

FILE NO. 19726.51308 - FIG-3
DATE FEBRUARY 2020

FIG-3

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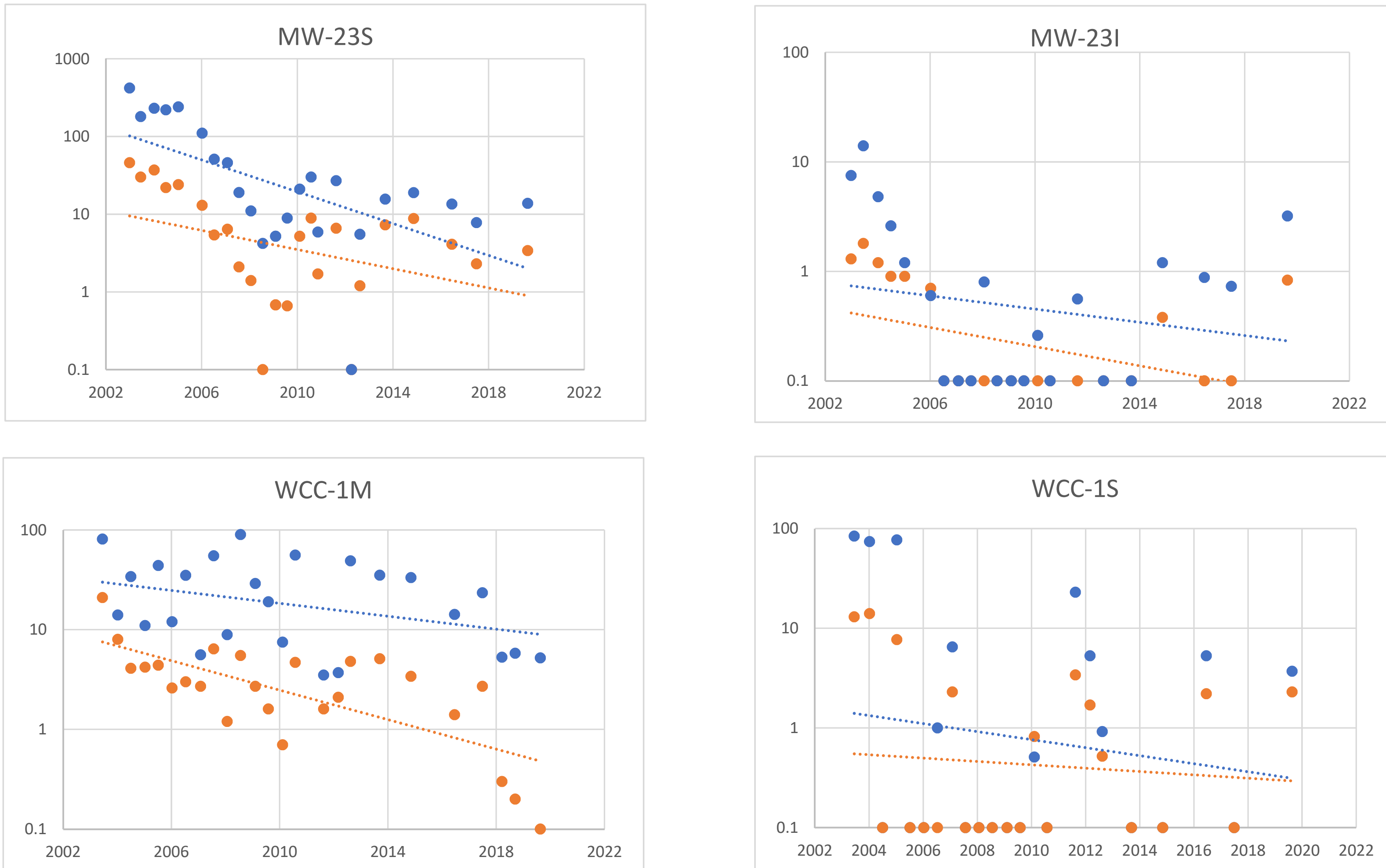
I:\EVOR-PHILLIPS.19726\51308.EVOR-PHILLIPS-I\DOCS\DWG\SHEETS\2019_51308FIGURE3.DWG

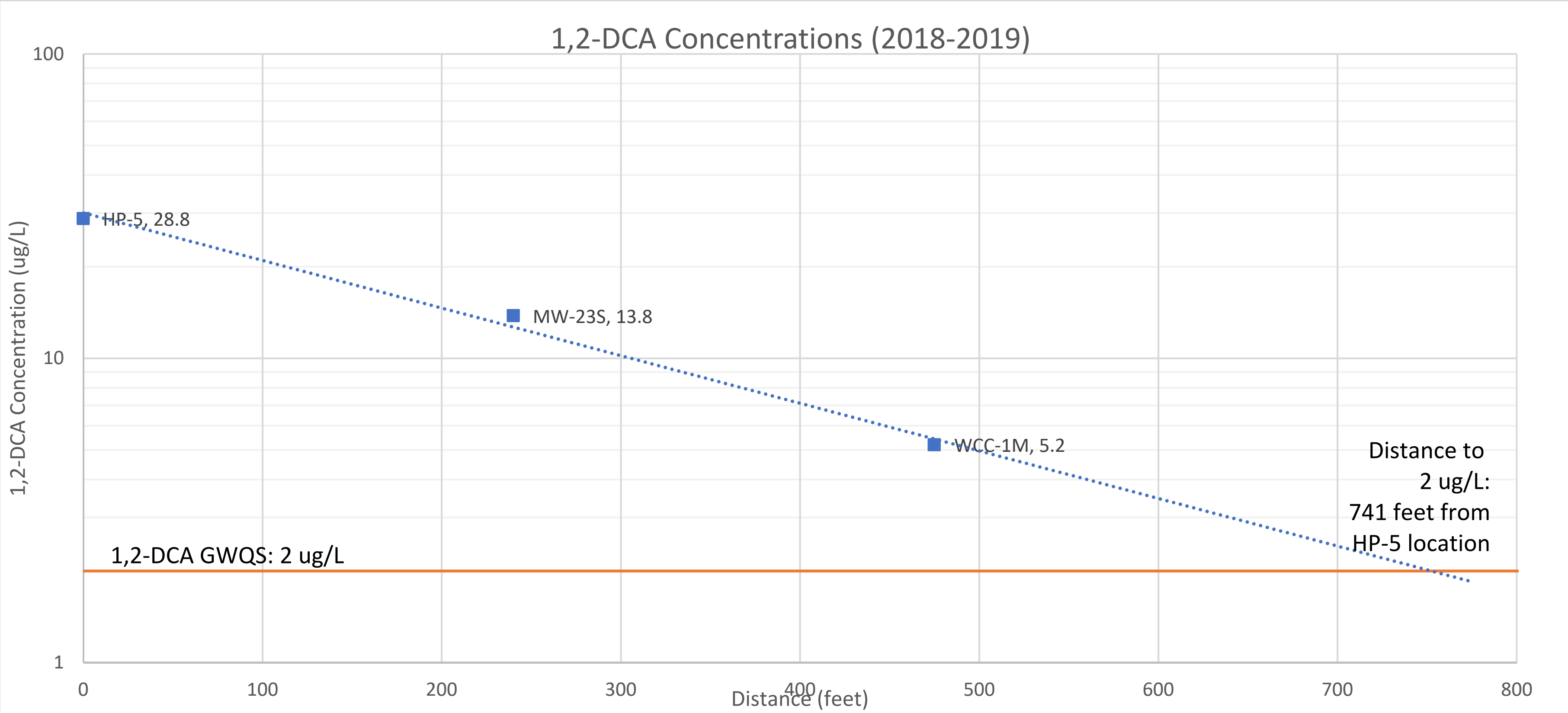


Legend
- 1,2-dichloroethane concentration (ug/L)
- trichloroethene concentration (ug/L)

Notes:
Concentrations (y axis) in units of ug/L, displayed on logarithmic scale
Sample results of ND (not-detected) were replaced with 0.1 ug/L for quantitative evaluation

Figure 4
Time-Concentration Plots
Offsite Groundwater Evaluation
Evor Phillips Leasing Company Site
Old Bridge, New Jersey

RAMBOLL



Legend

● 1,2-dichloroethane concentration (ug/L)

Notes:

Concentrations (y axis) in units of ug/L, displayed on logarithmic scale

Figure 5

Current 1,2-DCA Impacts Centerline

Offsite Groundwater Evaluation Evor

Phillips Leasing Company Site Old

Bridge, New Jersey

RAMBOLL

ATTACHMENT A
EPA/NJDEP EMAILED COMMENTS, 2019

Jeff Levesque

From: Osolin, John <Osolin.John@epa.gov>
Sent: Tuesday, August 13, 2019 3:06 PM
To: Chris Young; Matt Grubb; Jeffrey Levesque
Cc: Puvogel, Rich; Vogel, Lynn; Kathy T Baker
Subject: Comments regarding the OU# Groundwater Screening Report for EVOR Phillips dated April 2019

EPA and NJDEP have reviewed the Operable Unit 3 (OU3) Groundwater Screening Report dated April 5, 2019 for the Evor Phillips Leasing Company Superfund Site (EPLC), in Old Bridge Twp., Middlesex County, NJ. This report was submitted to summarize recent groundwater sampling activities to evaluate downgradient groundwater conditions following two rounds of in-situ chemical oxidation (ISCO) injections.

The intent of the OU3 action was to use in-situ chemical oxidation to destroy residual contamination at EPLC, to prevent offsite migration of the organic contaminants in groundwater. The original measure of success was achievement of NJ Groundwater Criteria on EPLC property in and near the source areas. After two rounds of ISCO injections, and several years of monitoring, the injections have not achieved the NJ Groundwater Criteria for 1,2 DCA and TCE on-site. The settling parties then suggested that the overall goal of preventing the down-gradient migration of contaminants was achieved, and therefore EPA and NJDEP could consider the remediation complete. While EPA and NJDEP agreed that might be the case, the current network of wells was not configured to confirm that conclusion. EPA, NJDEP, and the site settling defendants group agreed on placing 8 Hydropunch (HP) wells along the Conrail right-of-way, and sampling them at 3 depths, to determine if the site contaminants were migrating off-site, and if so, where were they going. The sampling indicated that there were exceedances of the NJ Groundwater Criteria of more than an order of magnitude in HP-2, HP-5 and HP-8 and lesser exceedances in all the other HP wells with the exception of HP-4 which had no exceedances. The HP sampling provided information on where contamination has left the EPLC property. The next step would be to evaluate the groundwater further down-gradient, to determine a point of compliance, which could then be monitored.

The Conclusions on page 6 of this document state, "Existing off-site monitoring wells (e.g., ISCO-MW-4, MW-10S) along with monitoring well series MW-23 and WCC-1, and monitoring well MW-14S, which are located further downgradient, provide for continued monitoring of downgradient groundwater conditions. The adequacy of this existing monitoring well network is further supported by historical groundwater monitoring results for other nearby wells (MW-14D, MW-13S, and MW-13D) ..."

NJDEP provided the following comments on the above referenced wells:

a. MW-13 cluster: Attachment 5 indicates that volatile organic compounds (VOCs) were historically detected at low levels in MW-13S (3 to 18 ft. below ground surface (bgs) interval), and at 1 to 2 orders of magnitude higher in MW-13D (93 to 103 ft. bgs interval); however, neither well has been sampled for at least 8 years. Furthermore, Figure 7 indicates that VOCs were detected in HP-8 at low concentrations in the 30 to 32 ft. bgs interval, and 1 to 2 orders of magnitude higher (and above the Groundwater Quality Standards {GWQS} for 1,2-Dichloroethane {DCA}) in the 40 to 42 ft. bgs interval. Since the MW-13 well cluster has not been sampled in over 8 years, it is unclear at this time if these wells adequately monitor existing conditions at and downgradient of HP-8 and the site.

b. MW-14 cluster: Figure 5 and Attachment 5 indicates that VOCs were not detected in the shallow (7 to 12 ft. bgs) or deeper (12.5 to 17.5 ft. bgs) intervals of MW-14S in 2017 and but were historically detected at higher concentrations in MW-14D (93 to 103 ft. bgs interval) in 2003. Furthermore, Figure 7 indicates that VOCs were detected at low concentrations (and above the GWQS for trichloroethene {TCE} and 1,2-DCA) in the 21 to 23 ft. bgs and 31 to 33 ft. bgs intervals in HP-3. Since the MW-14S well was sampled at shallower intervals (than HP-3) and MW-14D has not been sampled in several years, it is unclear at this time if these wells adequately monitor conditions at and downgradient of HP-3 and the site.

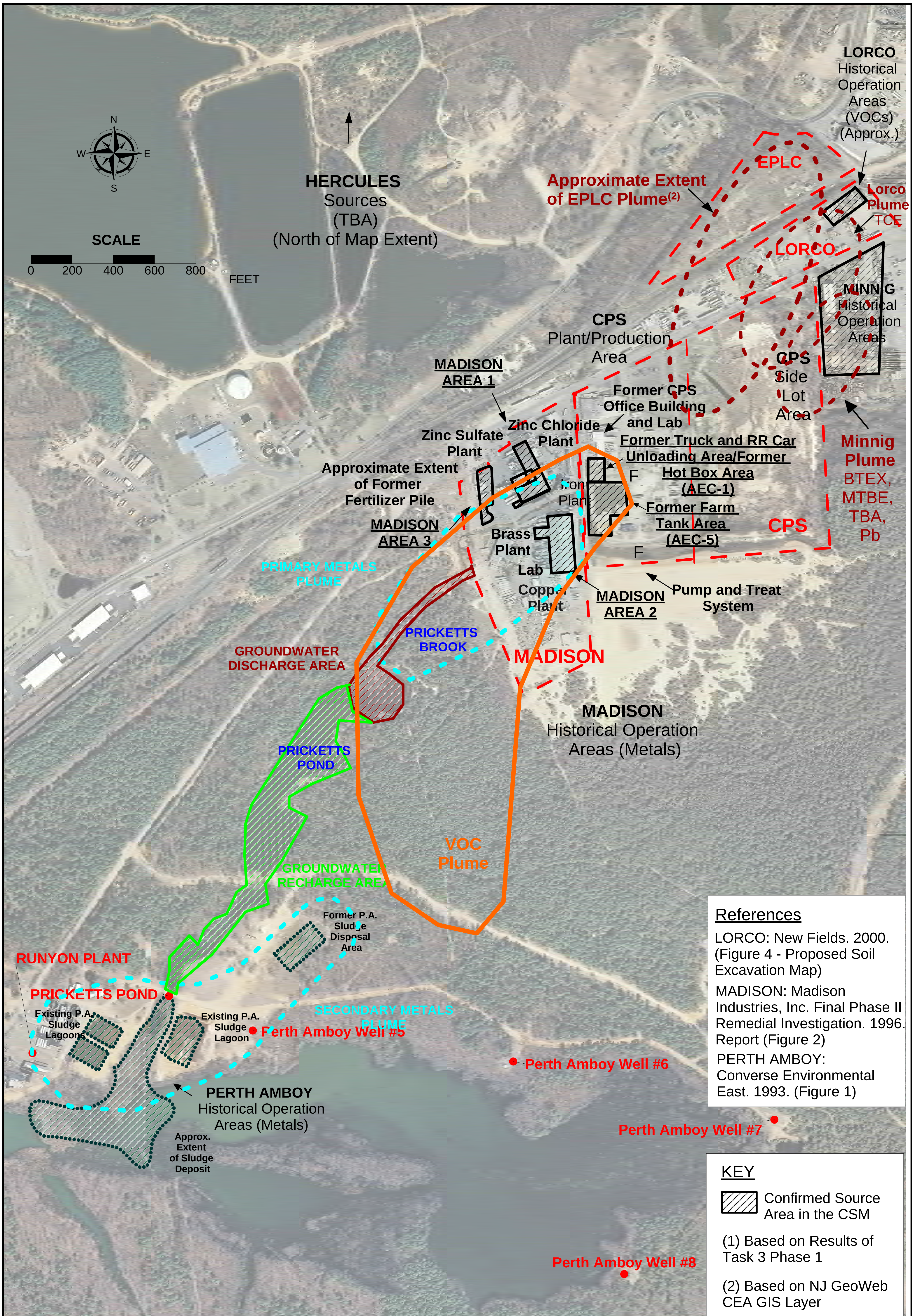
c. ISCO-MW-4: Figure 5 indicates that ISCO-MW-4 (15 to 20 ft. bgs interval) has not been sampled since November 2015 as the well has been dry during each annual sampling event. Figure 7 also indicates that VOCs were detected at low concentrations (but above the GWQS for TCE) in the 21 to 23 ft. bgs and 31 to 33 ft. bgs intervals in HP-1 adjacent and slightly upgradient of ISCO-MW-4. Due to dry conditions, and of shallow nature of ISCO-MW-4 relative to boring HP-1, the Department finds that ISCO-MW-4 does not adequately monitor conditions at HP-1 and downgradient of the site.

d. MW-10S: Figure 5 indicates that VOCs have been detected in MW-10S (23 to 28 ft. bgs interval) above the GWQS for trichloroethene {TCE} and 1,2-DCA. In addition, Figure 7 indicates that VOCs have also detected in downgradient boring HP-7 (in all three intervals to a depth of 42 ft.) above the GWQS. Since VOCs have been detected downgradient and at deeper intervals, the Department does not concur that MW-10S is an adequately located to monitor downgradient groundwater conditions.

e. WCC-1 cluster: Figure 5 indicates that VOCs have been detected intermittently in WCC-1S (30 to 35 ft bgs) and above the GWQS in WCC-1M (48 to 53 ft. bgs). However, the document does not provide historical data for deeper well WCC-1D. Please provide historical data and screen interval for WCC-1D, and current condition of the well. Also, please clarify the topography/elevation of WCC-1 cluster, relative to HP-7, HP-8 and the site, and confirm if the well cluster is adequately screened to monitor all contaminants emanating from the site.

EPA and NJDEP are unable determine if the existing well network is capable of monitoring the offsite migration of the site contaminants. Based on the comments above, the EVOR settling parties should propose a plan that will enable NJDEP and EPA determine if the residual contamination, remaining after the two rounds of ISCO treatment, will impact down-gradient groundwater resources. EPA suggests two options: to assess and sample the existing wells, and identify additional well locations that will address EPA and NJDEP concerns, or present another method that will address the sources (such as ISCO with soil mixing, heat treatment, or excavation). Please feel free to contact me at this email address or my phone # (212) 637-4412 if you have any questions.

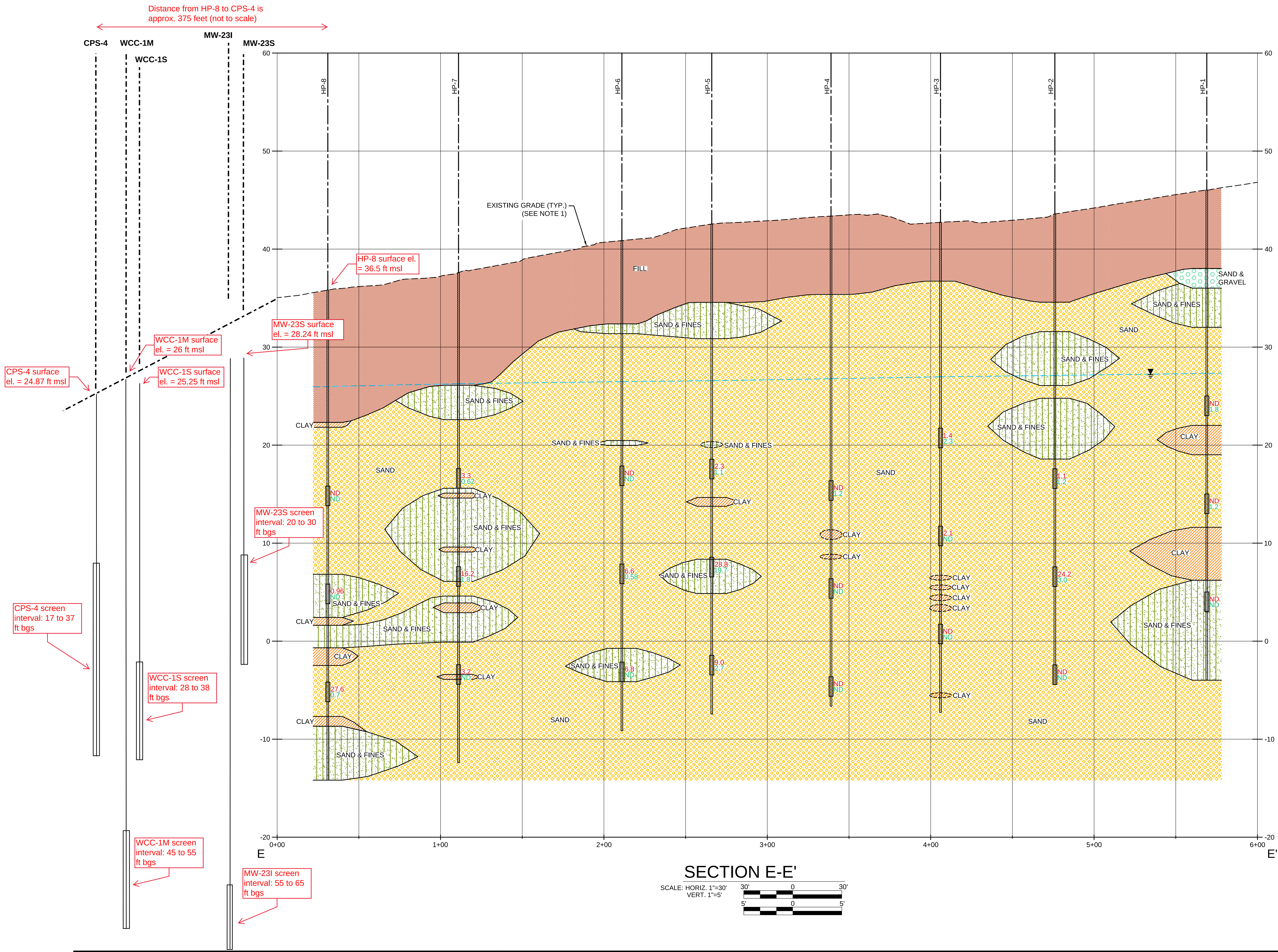
ATTACHMENT B
CONCEPTUAL SITE MODEL PLAN VIEW (FIGURE 7-1, CPS/MADISON SUPERFUND SITE REMEDIAL INVESTIGATION REPORT [2015])



PRINCETON GEOSCIENCE, INC.
15 Vandeventer Ave. • Princeton, NJ 08542
tel: 609.279.0008 • www.princetongeoscience.com

SCALE: See Map	DATE: 9/17/2011	FIGURE 7-1 CSM PLAN VIEW
PREPARED BY: LC	CHECKED BY: JP	
PROJECT NO.: 08540	FILE NAME: Sources	CPS/MADISON SUPERFUND SITE OLD BRIDGE, NEW JERSEY

ATTACHMENT C
HYDROPUNCH – CROSS SECTION (FIGURE 6, GROUNDWATER SCREENING REPORT. OBG PART OF RAMBOLL, 2019)



SECTION E-E'

SCALE: HORIZ. 1"=30'
VERT. 1"=5'

NOTES:

1. EXISTING GRADE ELEVATIONS AND LOCATIONS WERE OBTAINED BY MASER CONSULTING, PA ON AUGUST 10, 2012 & JANUARY 14, 2013.
2. ALL ELEVATIONS SHOWN ARE BASED ON NAVD1988.
3. ALL SUBSURFACE FEATURES/LITHOLOGY SHOWN ARE APPROXIMATE AND ARE PRESENTED FOR GENERAL ILLUSTRATIVE PURPOSES ONLY. SUBSURFACE FEATURES/LITHOLOGY ARE BASED ON HYDROPUNCH BORING LOGS.
4. GROUNDWATER DATA PRESENTED FOR HYDROPUNCH (HP) LOCATIONS ARE FROM NOVEMBER 2018.

LEGEND

- SAND & GRAVEL
- SAND & FINES
- CLAY
- SAND
- FILL
- ISCO TREATMENT AREAS
- WELL SCREENING INTERVAL
- ND — NON-DETECT
- NS — NOT SAMPLED
- CONRAIL (NORFOLK SOUTHERN) RAIL LINE
- 58 — 1,2-DICHLOROETHANE (ug/L)
- 14 — TRICHLOROETHENE (ug/L)
- WATER TABLE
- APPROXIMATE WATER TABLE ELEVATION (INFERRED FROM NOVEMBER 2018 MONITORING WELL MEASUREMENTS)

IN CHARGE OF G.ANGYAL	NO.	DATE	REVISION	INT.	
DESIGNED BY L.KELLER					
CHECKED BY J.LEVESQUE					
DRAWN BY D.KENT					

O'BRIEN & GERE ENGINEERS, INC

EVOR PHILLIPS LEASING COMPANY SITE
GROUNDWATER SCREENING WORKPLAN
NEW JERSEY

HYDROPUNCH - CROSS SECTION

FILE NO. 19726.51308 -FIG-6
DATE APRIL 2019
FIG-6

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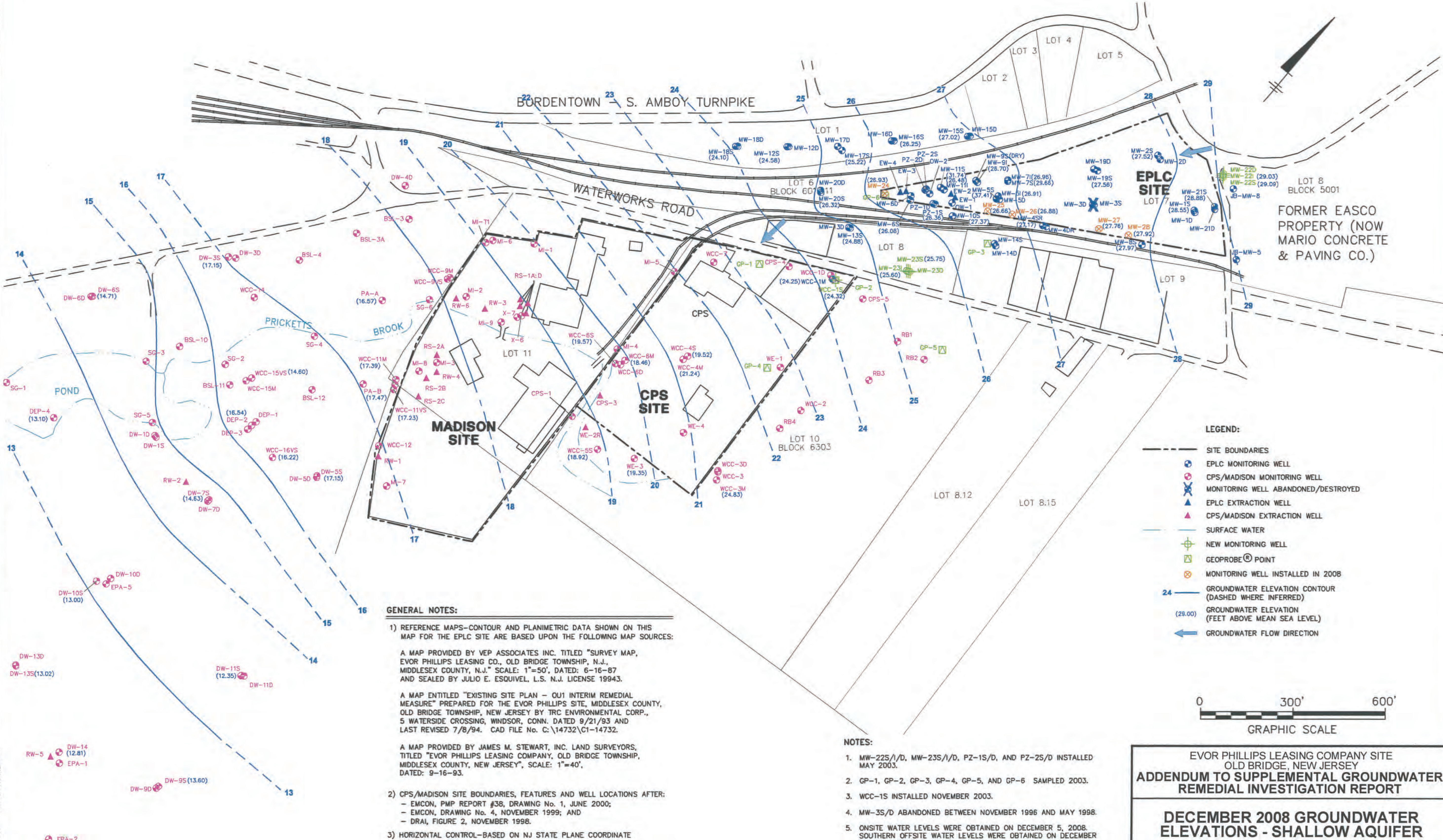
\\SERVER03-01\PROJECTS\EVOR-PHILLIPS.19726\51308.EVOR-PHILLIPS-I\DOCS\DWG\SHEETS\2018_51308.FIG6.DWG

ATTACHMENT D
HISTORICAL ISOCONCENTRATION AND GROUNDWATER ELEVATION CONTOUR MAPS (FIGURES 4-17, 4-18, 5-17, 5-18, EVOR PHILLIPS LEASING COMPANY SUPERFUND SITE, GROUNDWATER REMEDIAL INVESTIGATION REPORT [2011])



GENERAL NOTES:

1) REFERENCE MAPS-CONTOUR AND PLANIMETRIC DATA SHOWN ON THIS MAP FOR THE EPLC SITE ARE BASED UPON THE FOLLOWING MAP SOURCES:

A MAP PROVIDED BY VEP ASSOCIATES INC. TITLED "SURVEY MAP, EVOR PHILLIPS LEASING CO., OLD BRIDGE TOWNSHIP, N.J., MIDDLESEX COUNTY, N.J." SCALE: 1"=50', DATED: 6-16-87 AND SEALED BY JULIO E. ESQUIVEL, L.S. N.J. LICENSE 19943.

A MAP ENTITLED "EXISTING SITE PLAN - OU1 INTERIM REMEDIAL MEASURE" PREPARED FOR THE EVOR PHILLIPS SITE, MIDDLESEX COUNTY, OLD BRIDGE TOWNSHIP, NEW JERSEY BY TRC ENVIRONMENTAL CORP., 5 WATERSIDE CROSSING, WINDSOR, CONN. DATED 9/21/93 AND LAST REVISED 7/8/94. CAD FILE No. C:\14732\C1-14732.

A MAP PROVIDED BY JAMES M. STEWART, INC. LAND SURVEYORS, TITLED "EVOR PHILLIPS LEASING COMPANY, OLD BRIDGE TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY", SCALE: 1"=40', DATED: 9-16-93.

2) CPS/MADISON SITE BOUNDARIES, FEATURES AND WELL LOCATIONS AFTER:
- EMCON, PMP REPORT #38, DRAWING No. 1, JUNE 2000;
- EMCON, DRAWING No. 4, NOVEMBER 1999; AND
- DRAI, FIGURE 2, NOVEMBER 1998.

3) HORIZONTAL CONTROL-BASED ON NJ STATE PLANE COORDINATE SYSTEM, NAD 83.
VERTICAL CONTROL-NGVD 29 (OLDER DATUM UTILIZED TO PROVIDE CONTINUITY WITH PREVIOUS SUBMITTALS AND WITH CPS/MADISON SITE DATA). EPLC AND CPS/MADISON VERTICAL CONTROL VERIFIED BY J.M. STEWART SURVEYORS, DECEMBER 2001.

NOTES:

1. MW-22S/I/D, MW-23S/I/D, PZ-1S/D, AND PZ-2S/D INSTALLED MAY 2003.
2. GP-1, GP-2, GP-3, GP-4, GP-5, AND GP-6 SAMPLED 2003.
3. WCC-1S INSTALLED NOVEMBER 2003.
4. MW-3S/D ABANDONED BETWEEN NOVEMBER 1996 AND MAY 1998.
5. ONSITE WATER LEVELS WERE OBTAINED ON DECEMBER 5, 2008. SOUTHERN OFFSITE WATER LEVELS WERE OBTAINED ON DECEMBER 16, 2008 BY CIBA.
6. WELLS 7S, 9S, AND 11S ELEVATIONS WERE NOT USED FOR CONTOURING BECAUSE THIS IS CONSIDERED A MOUNDED ZONE WITH A LOCALIZED CLAY. THEREFORE, THESE I-ZONE WELLS WERE USED FOR CONTOURING.

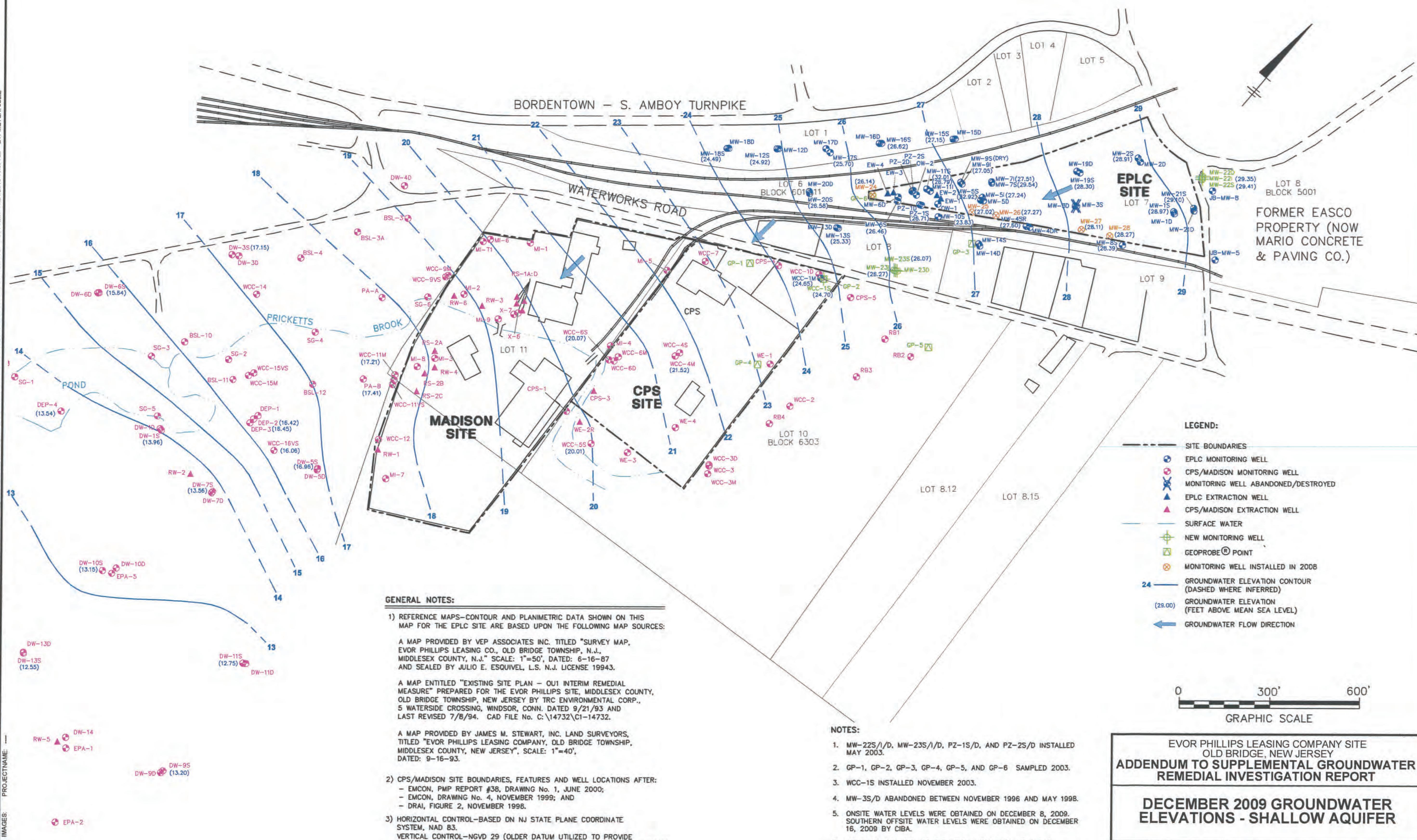
EVOR PHILLIPS LEASING COMPANY SITE
OLD BRIDGE, NEW JERSEY

ADDENDUM TO SUPPLEMENTAL GROUNDWATER REMEDIAL INVESTIGATION REPORT

DECEMBER 2008 GROUNDWATER ELEVATIONS - SHALLOW AQUIFER

ARCADIS

FIGURE
4-17



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A MAP PROVIDED BY JAMES M. STEWART, INC. LAND SURVEYORS, TITLED "EVOR PHILLIPS LEASING COMPANY, OLD BRIDGE TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY", SCALE: 1"=40', DATED: 9-16-93.

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VERTICAL CONTROL-NGVD 29 (OLDER DATUM UTILIZED TO PROVIDE CONTINUITY WITH PREVIOUS SUBMITTALS AND WITH CPS/MADISON SITE DATA). EPLC AND CPS/MADISON VERTICAL CONTROL VERIFIED BY J.M. STEWART SURVEYORS, DECEMBER 2001.

NOTES:

1. MW-22S/I/D, MW-23S/I/D, PZ-1S/D, AND PZ-2S/D INSTALLED MAY 2003.
2. GP-1, GP-2, GP-3, GP-4, GP-5, AND GP-6 SAMPLED 2003.
3. WCC-1S INSTALLED NOVEMBER 2003.
4. MW-3S/D ABANDONED BETWEEN NOVEMBER 1996 AND MAY 1998.
5. ONSITE WATER LEVELS WERE OBTAINED ON DECEMBER 8, 2009. SOUTHERN OFFSITE WATER LEVELS WERE OBTAINED ON DECEMBER 16, 2009 BY CIBA.
6. WELLS 7S, 9S, AND 11S ELEVATIONS WERE NOT USED FOR CONTOURING BECAUSE THIS IS CONSIDERED A MOUNDED ZONE WITH A LOCALIZED CLAY. THEREFORE, THESE I-ZONE WELLS WERE USED FOR CONTOURING.

EVOR PHILLIPS LEASING COMPANY SITE
OLD BRIDGE, NEW JERSEY

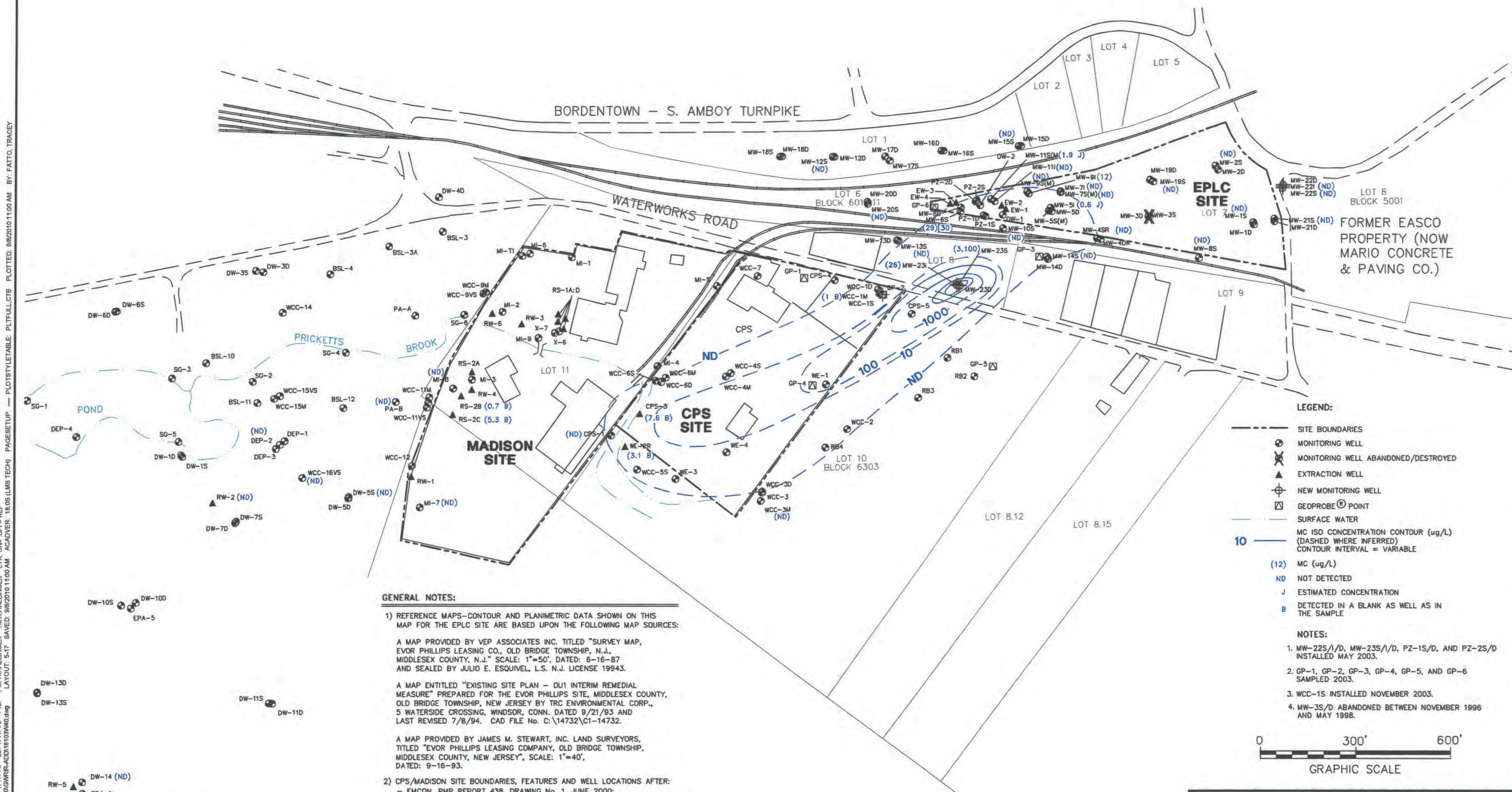
ADDENDUM TO SUPPLEMENTAL GROUNDWATER REMEDIAL INVESTIGATION REPORT

DECEMBER 2009 GROUNDWATER ELEVATIONS - SHALLOW AQUIFER

ARCADIS

FIGURE 4-18

CITY:CRANBURY-NJ DIV/GROUP:ENVCAD DB:TFATTO LD:TFATTO PIC: PM:K.HALLINGER TM:K.HALLINGER LYR:ON=*;OFF=*REF* PAGESETUP: — PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 10/21/2010 10:07 AM BY: MEYER, JULIE
G:\ENVCAD\CRANBURY\ACT\B0018103\2010\00010\GWR\R-ADD\18103W22.dwg LAYOUT: 4-18 SAVED: 10/21/2010 10:06 AM ACADVER: 18.0S (LMS TECH)
XREFS: 18103X01 IMAGES: PROJECTNAME: ---



LEGEND:

- SITE BOUNDARIES
- MONITORING WELL
- MONITORING WELL ABANDONED/DESTROYED
- EXTRACTION WELL
- NEW MONITORING WELL
- GEOPROBE® POINT
- SURFACE WATER
- 10 — MC ISO CONCENTRATION CONTOUR (ug/L) (DASHED WHERE INFERRED) CONTOUR INTERVAL = VARIABLE
- (12) MC (ug/L)
- ND NOT DETECTED
- J ESTIMATED CONCENTRATION
- B DETECTED IN A BLANK AS WELL AS IN THE SAMPLE

NOTES:

1. MW-22S/I/D, MW-23S/I/D, PZ-1S/D, AND PZ-2S/D INSTALLED MAY 2003.
2. GP-1, GP-2, GP-3, GP-4, GP-5, AND GP-6 SAMPLED 2003.
3. WCC-1S INSTALLED NOVEMBER 2003.
4. MW-3S/D ABANDONED BETWEEN NOVEMBER 1996 AND MAY 1998.

0 300' 600'
GRAPHIC SCALE

GENERAL NOTES:

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4) CPS/MADISON DATA PROVIDED BY CIBA SPECIALTY CHEMICALS, 2003.

EVOR PHILLIPS LEASING COMPANY SITE
OLD BRIDGE, NEW JERSEY

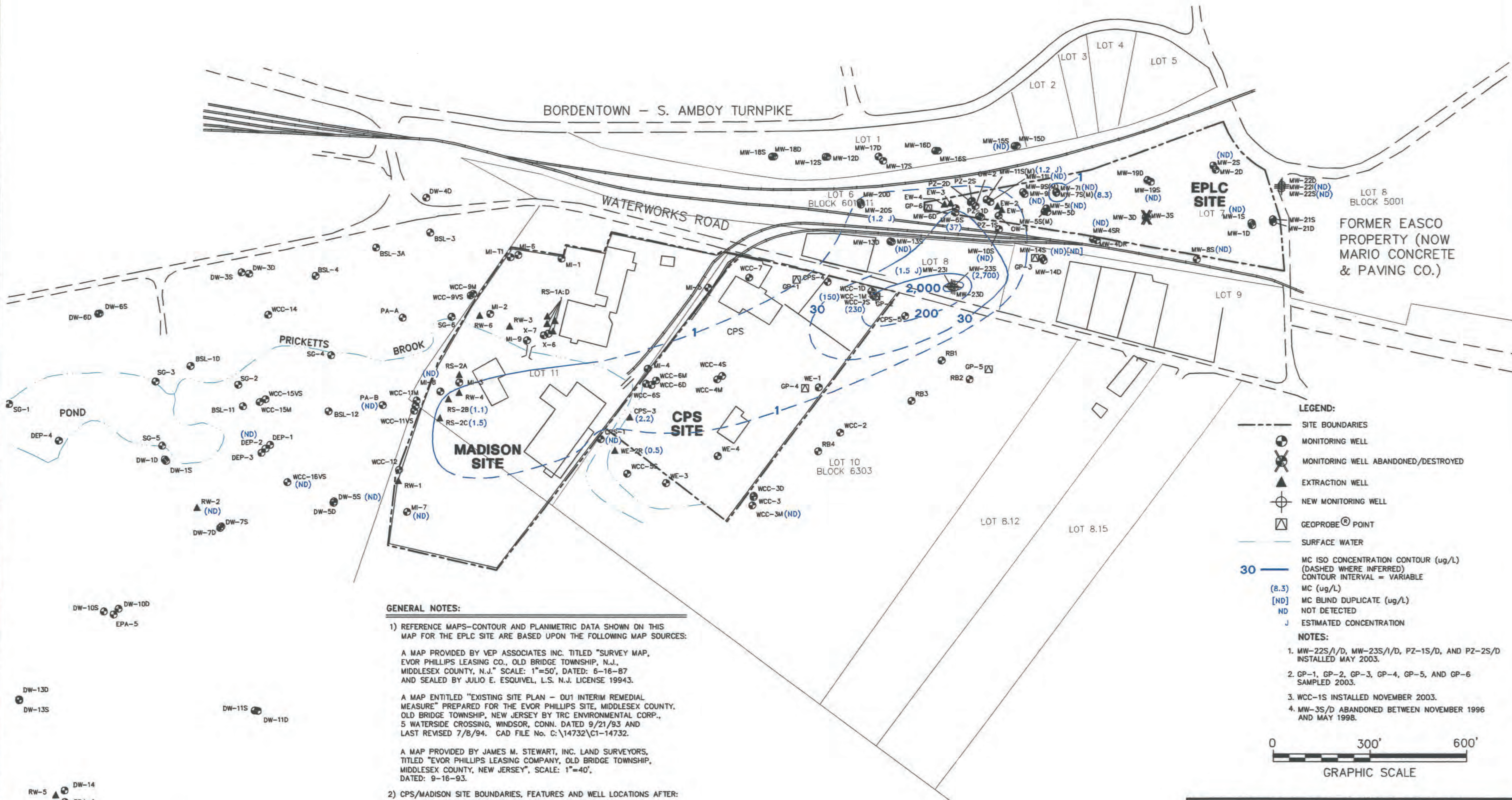
ADDENDUM TO SUPPLEMENTAL GROUNDWATER REMEDIAL INVESTIGATION REPORT

METHYLENE CHLORIDE (MC) SHALLOW AQUIFER - JUNE 2003 EPLC AND CPS/MADISON SITES

ARCADIS

FIGURE **5-17**

CITY:CRANBURY-NJ DIV/GROUP: ENVCAD DB: TFATTO LD: TFATTO PIC: PM: K.HALLINGER TM: K.HALLINGER LYR: ON=*;OFF=*REF* PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 9/8/2010 11:00 AM BY: FATTO, TRACEY
G:\ENVCAD\CRANBURY\ACT\B0018103\2010\00010\GWRIR-ADD\18103W40.dwg LAYOUT: 5-17 SAVED: 9/8/2010 11:00 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: —
XREFS: 18103X01 IMAGES: PROJECTNAME: —



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A MAP PROVIDED BY JAMES M. STEWART, INC. LAND SURVEYORS, TITLED "EVOR PHILLIPS LEASING COMPANY, OLD BRIDGE TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY", SCALE: 1"=40', DATED: 9-16-93.

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4) EPLC SAMPLES WERE COLLECTED 12/8/03 – 12/10/03. CPS/MADISON SAMPLES WERE COLLECTED 12/17/03 – 12/18/03. ANALYTICAL RESULTS PROVIDED BY CIBA SPECIALTY CHEMIALS (2004).

5) CPS' RESULT FOR WCC-1M IS 81 ug/L, BBL's RESULT FOR WCC-1M IS 150 ug/L. THE HIGHEST RESULT IS PLOTTED.

EVOR PHILLIPS LEASING COMPANY SITE
OLD BRIDGE, NEW JERSEY
ADDENDUM TO SUPPLEMENTAL GROUNDWATER REMEDIAL INVESTIGATION REPORT

METHYLENE CHLORIDE (MC) SHALLOW AQUIFER - DECEMBER 2003 EPLC AND CPS/MADISON SITES

ARCADIS

FIGURE
5-18

ATTACHMENT E
WELL CONSTRUCTION AND GROUNDWATER CONCENTRATION DATA FOR OFFSITE WELLS

Well Construction Information

NAME	Installation Date	SURFACE EL (FT MSL)	TOC (FT MSL)	TOP OF SCREEN (FT BGS)	BOTTOM OF SCREEN (FT BGS)
CPS-4	8/18/1995	24.87	27.52	17	37
CPS-5	8/21/1995	27.09	27.88	28	38
MI-05	7/29/1975	24.16	25.25	unknown	15
WCC-1M	1/19/1981	25.48	27.45	44	54
WCC-1S	11/21/2003	25.25	24.88	28	38
WCC-4S	unknown	22.76	22.90	25	35
WCC-4M	unknown	22.84	23.81	47	57
WE-1	2/10/1983	25.62	27.72	23	25
MW-14S	1/18/1990	32.28	32.03	4	19
MW-23D	5/30/2003	28.26	27.95	90	100
MW-23I	5/23/2003	28.22	27.89	55	65
MW-23S	5/29/2003	28.24	27.89	20	30
WCC-1D	1/6/1981	26.27	27.77	91	101
CPS-8	Unknown		26.28	5	15
WCC-3M	1/15/1981	26.00	27.31	38	48

Attachment E
Data for Off-Site Wells
Evor Phillips

Well	Sample Date	1,2-DCA (ug/L)	TCE (ug/L)
CPS-4	4/6/2005	1.2	0.6
CPS-4	11/20/2019	ND	ND
CPS-5	3/18/2005	300	18
CPS-5	11/20/2019	21.9	5
MI-05	12/15/2004	2.2	0.4
MI-05	6/15/2006	1.4	0.3
WCC-4S	12/3/1992	6 U	2
WCC-4S	9/19/1994	5.4	1
WCC-4S	4/6/2005	89	15
WCC-4M	4/6/2005	16	3.3
MW-23D	6/24/2003	3.1	0.7 J
MW-23D	12/9/2003	2 U	1 U
MW-23D	12/21/2004	2 U	1 U
MW-23D	6/28/2005	2 U	0.6 J
MW-23D	6/21/2006	2 U	0.7 J
MW-23D	12/20/2006	2 U	1 U
MW-23D	7/6/2007	0.3 U	0.4 U
MW-23D	12/27/2007	2 U	1 U
MW-23D	6/24/2008	2 U	1 U
MW-23D	12/19/2008	2 U	1 U
MW-23D	6/30/2009	ND	ND
MW-23D	7/2/2009	1 U	1 U
MW-23D	12/23/2009	1 U	0.44 J
MW-23D	6/29/2010	ND	ND
MW-23D	12/16/2010	ND	ND
MW-23D	12/29/2011	ND	ND
MW-23D	12/20/2012	ND	ND
MW-23D	1/6/2014	ND	ND
MW-23D	3/9/2015	ND	ND
MW-23D	10/5/2016	ND	ND
MW-23D	10/10/2017	ND	ND
MW-23D	11/19/2019	ND	ND
MW-23I	6/24/2003	7.5	1.3
MW-23I	12/9/2003	14	1.8
MW-23I	6/29/2004	4.8	1.2
MW-23I	12/21/2004	2.6	0.9 J
MW-23I	6/28/2005	1.2 J	0.9 J
MW-23I	6/21/2006	0.6 J	0.7 J
MW-23I	12/20/2006	2 U	1 U
MW-23I	7/6/2007	0.3 U	0.4 U
MW-23I	12/27/2007	2 U	1 U
MW-23I	6/24/2008	0.8 J	1 U
MW-23I	12/19/2008	2 U	1 U
MW-23I	6/30/2009	ND	ND

Attachment E
Data for Off-Site Wells
Evor Phillips

Well	Sample Date	1,2-DCA (ug/L)	TCE (ug/L)
MW-23I	7/2/2009	1 U	1 U
MW-23I	12/23/2009	1 U	1 U
MW-23I	6/30/2010	0.26	ND
MW-23I	12/16/2010	ND	ND
MW-23I	12/29/2011	0.56	ND
MW-23I	12/20/2012	ND	ND
MW-23I	1/6/2014	ND	ND
MW-23I	3/9/2015	1.2	0.38
MW-23I	10/5/2016	0.88	ND
MW-23I	10/10/2017	0.73	ND
MW-23I	11/20/2019	3.2	0.83
MW-23S	6/24/2003	420	46
MW-23S	12/9/2003	180	30 J
MW-23S	6/29/2004	230	37
MW-23S	12/21/2004	220	22 J
MW-23S	6/28/2005	240	24
MW-23S	6/21/2006	110	13
MW-23S	12/20/2006	51	5.4
MW-23S	7/6/2007	46	6.4
MW-23S	12/27/2007	19	2.1
MW-23S	6/24/2008	11	1.4
MW-23S	12/19/2008	4.2	1 U
MW-23S	6/30/2009	5.2	0.68 J
MW-23S	7/2/2009	5.2	0.68 J
MW-23S	12/23/2009	8.9	0.66 J
MW-23S	6/29/2010	21	5.2
MW-23S	12/16/2010	30	8.9
MW-23S	3/29/2011	5.9	1.7
MW-23S	12/29/2011	27	6.6
MW-23S	8/16/2012	ND	ND
MW-23S	12/20/2012	5.5	1.2
MW-23S	1/6/2014	15.6	7.3
MW-23S	3/9/2015	18.9	8.8
MW-23S	10/5/2016	13.5	4.1
MW-23S	10/10/2017	7.8	2.3
MW-23S	11/19/2019	13.8	3.4
WCC-1M	12/9/2003	81	21
WCC-1M	6/29/2004	14	8
WCC-1M	12/20/2004	34	4.1
WCC-1M	6/28/2005	11	4.2
WCC-1M	12/21/2005	44	4.4
WCC-1M	6/21/2006	12	2.6
WCC-1M	12/20/2006	35	3
WCC-1M	7/6/2007	5.6	2.7

Well	Sample Date	1,2-DCA (ug/L)	TCE (ug/L)
WCC-1M	12/27/2007	55	6.4
WCC-1M	6/24/2008	8.9	1.2
WCC-1M	12/19/2008	90	5.5
WCC-1M	7/2/2009	29	2.7
WCC-1M	12/23/2009	19	1.6
WCC-1M	6/30/2010	7.5	0.7
WCC-1M	12/16/2010	56	4.7
WCC-1M	12/29/2011	3.5	1.6
WCC-1M	7/11/2012	3.7	2.1
WCC-1M	12/20/2012	49	4.8
WCC-1M	1/13/2014	35.1	5.1
WCC-1M	3/4/2015	33.3	3.4
WCC-1M	10/4/2016	14.2	1.4
WCC-1M	10/9/2017	23.4	2.7
WCC-1M	11/19/2019	5.2	ND
WCC-1S	12/9/2003	84	13
WCC-1S	6/29/2004	74	14
WCC-1S	12/20/2004	ND	ND
WCC-1S	6/28/2005	77	7.7
WCC-1S	12/21/2005	ND	ND
WCC-1S	6/21/2006	ND	ND
WCC-1S	12/20/2006	1	ND
WCC-1S	7/6/2007	6.5	2.3
WCC-1S	12/27/2007	ND	ND
WCC-1S	6/24/2008	ND	ND
WCC-1S	12/19/2008	ND	ND
WCC-1S	7/2/2009	ND	ND
WCC-1S	12/23/2009	ND	ND
WCC-1S	6/30/2010	0.51	0.82
WCC-1S	12/16/2010	ND	ND
WCC-1S	12/29/2011	23	3.4
WCC-1S	7/11/2012	5.3	1.7
WCC-1S	12/20/2012	0.92	0.52
WCC-1S	1/13/2014	ND	ND
WCC-1S	3/4/2015	ND	ND
WCC-1S	10/4/2016	5.3	2.2
WCC-1S	10/9/2017	ND	ND
WCC-1S	11/19/2019	3.7	2.3
WCC-3M	6/29/2004	ND	ND
WCC-3M	12/20/2004	ND	ND
WCC-3M	6/28/2005	ND	ND
WCC-3M	12/21/2005	ND	ND
WCC-3M	6/21/2006	ND	ND
WCC-3M	12/20/2006	ND	ND

Attachment E
Data for Off-Site Wells
Evor Phillips

Well	Sample Date	1,2-DCA (ug/L)	TCE (ug/L)
WCC-3M	7/6/2007	ND	ND
WCC-3M	1/22/2008	ND	ND
WCC-3M	6/24/2008	ND	ND
WCC-3M	12/19/2008	ND	ND
WCC-3M	7/2/2009	ND	ND
WCC-3M	12/23/2009	ND	0.34
WCC-3M	6/30/2010	ND	0.26
WCC-3M	7/11/2012	ND	0.2
WCC-3M	1/9/2013	ND	0.29
WCC-3M	1/13/2014	ND	ND
WCC-3M	3/4/2015	ND	0.29
WCC-3M	10/6/2016	ND	ND
WCC-3M	10/9/2017	ND	ND

Notes
J - estimated concentration
ND - constituent not detected in sample
ug/L - microgram per liter

ATTACHMENT F
DETECTED VOCS IN WCC-4S/WCC-4M (2005 SAMPLING EVENT) – CPS/MADISON SUPERFUND SITE

Attachment F
Detected VOCs in WCC-4S/WCC-4M (2005 Sampling Event)
CPS/Madison Superfund Site

Well	Sample Date	Compound	Groundwater Concentration (ug/L)
WCC-4S	4/6/2005	1,2-DICHLOROETHANE	89
		TRICHLOROETHENE	15
		TETRACHLOROETHYLENE (PCE)	0.8
		CIS-1,2-DICHLOROETHYLENE	13
		TRANS-1,2-DICHLOROETHENE	0.2
		CARBON TETRACHLORIDE	0.2
		CHLOROFORM	2.8
		BENZENE	0.4
		1,1,1-TRICHLOROETHANE	0.3
		VINYL CHLORIDE	0.3
		1,1-DICHLOROETHANE	0.5
		1,1-DICHLOROETHENE	0.3
		1,1,2-TRICHLOROETHANE	0.1
		TRICHLOROETHYLENE (TCE)	15
		1,1,2,2-TETRACHLOROETHANE	1
		METHYLENE CHLORIDE	110
WCC-4M	4/6/2005	1,2-DICHLOROETHANE	16
		TRICHLOROETHENE	3.3
		TETRACHLOROETHYLENE (PCE)	0.2
		CIS-1,2-DICHLOROETHYLENE	3.7
		CHLOROFORM	0.5
		METHYLENE CHLORIDE	17
		1,1-DICHLOROETHANE	0.1
		1,1-DICHLOROETHENE	0.2
		1,1,2,2-TETRACHLOROETHANE	0.2

Notes
ug/L - microgram per liter